

opened through the series of carriages, into a beat for the proper watchmen of the train—a mode which has stood the test of all possible or actual circumstances, foreseen or unforeseen, such as those which have occurred or been suggested ever since we first insisted on its general advantages.—Mr. Edward's signal would perhaps be unobjectionable, and in this light alone we think it worthy of notice.—A patent has been taken out by Mr. Newton, for casting the whole of the iron wheels of a locomotive at once in a chill, so as to prevent unequal shrinking and fracture. This is to be effected by casting in a circular metal mould, the coldness of which chills and hardens the whole surface equally. The same difficulty, if we recollect right, was proposed, by a correspondent, to be overcome by help of an air blast on the red-hot metal, to prevent the unequal cooling.—An importation of nearly 400 bars of railway iron (one of several similar importations) has lately been made from the United States.—The Wye-bridge at Chepstow, on the Monmouth and Gloucester line, is to be of wood, and of the height of 50 feet from high water mark. The contract is taken, it is said, by a Bristol merchant, who has the frameworks already in a forward state. Mr. Robert Sharpe is proceeding with the embankment.—The strike of the stone-masons employed at Ashton, on the Manchester and Huddersfield, still continues, the reduction of 4d. and 6d. per day proposed by the company, who are their own contractors, being firmly resisted.—A large portion of another extensive viaduct has fallen—viz., one in course of erection at Fareham, on the Portsmouth branch of the South-Western line.—Another landslip, too, has occurred on the Edinburgh and Glasgow line, at the northern end of the viaduct across the Almond, and below the line, which is not one of those only now being tested for the first time by the destructive agencies of winter, as so many others have been, but a line now for six years consolidated and established.

SCOTCH CHURCH AND SCHOOLS, LITTLE RUSSELL STREET.

Few of the thronging hundreds who constantly pass down Little Russell-street, Covent Garden, have seen the National Scotch Church in Crown-court, although it stands within a few feet of them. Until 1841, it presented nothing more than a brick wall with holes in it, but in that year Mr. R. Wallace, with cement and considerable skill, gave it a Norman façade, bringing the staircases outside, and making of them effective features. The church then occupied a site of 60 ft. by 30 ft. Recently very considerable additions have been made under the able direction of Mr. Roberts,—the length has been extended from 60 ft. to 90 ft., the same character being preserved, the timbers of the roof thrown open, and much additional accommodation provided to meet the large congregation which Dr. Cunningham, the minister, has gathered round him.*

In connection with the church, a handsome school-house has been erected with its elevation in Little Russell-street, under the direction of the same architect. It is of the Tudor character in three stories, with a central door on the ground-floor, which on Sundays will give entrance to the church, and a bay window with a smaller window at each side, on the first floor. The string beneath the latter is inscribed, "Crown Court Church Schools, 1848." Six hundred children will be accommodated, and we are given to understand that although connected with the Scotch Church, the building is intended to supply the wants of its very destitute and crowded neighbourhood, without reference to sects. The Government grant in aid of the building fund, has been requested, and teachers sought from the Normal schools in the Borough-road and Gray's-inn-lane.

* We must not omit to mention that a new sewer has been carried through the court, and the owner of every house forced to fill up the cesspools and remove the pumps by which the flowing nuisance was raised, once a week or oftener, and sent down the open court into Russell-street. This evil has been often laid before the Sewers' Commissioners, but in consequence of the obstinacy of the tenants, one of whom would not suffer it to pass under his house, it has only now been accomplished.

SUPERVISING ARCHITECTS.

SIR,—Your late observations on the doings of the "Church Building Society," in respect of the appointment of "supervising architects," will go greatly, and, as I opine, rapidly to the removal of that element in their constitution. Your late correspondent says, very properly, "architects, as a body, will not submit to such an infliction."

It incidentally fell within the range of my engagements last week, in a neighbouring county, to visit a village church which had lately been restored. In the course of the contemplated improvement, it occurred to a beneficent lady, to contribute very liberally towards an enlarged and improved feature, by the addition of a clerestory. The edifice had already so far advanced, that "to return were worse than to go on," and, therefore, the stone pillars, designed originally to carry the roof, were converted into springers for lancet arches of such superincumbent clerestory wall. In the progress of the works, by some accident in the construction of the scaffolding (and which, *en passant*, seems by no means unusual, if the Euston-square evidence have any truth), one of these pillars was driven slightly out of its vertical position, but not so much as to be in danger, or even to create the apprehension of danger, and the church was finished: whereupon, a "supervising architect" arrives, *secundum artem*, to report thereon, and ere he entered the sacred edifice, he pronounced its foundation unstable, and thence proceeding, he declared the pillars to be trembling under their load—the roofing to be ill-constructed—and the works altogether to be badly performed! Such a sentence, so hastily given in the absence of the incumbent, was not particularly Christian-like to the delicate constitution of the vicar's lady. However, on her venturing to say that the "church was founded upon a rock," this ingredient of his condemnation was obliterated from his record. This sweeping censure very naturally placed the excellent pastor, with the wardens, the committee, and the local architect, all on the *qui vive*. Other professional gentlemen were forthwith employed to report, and having thus obtained a multiplied favourable opinion, they waited with some complacency the visit of another "revising architect" from the metropolitan society. In this gentleman, who arrived during my sojourn, the employment had lost all novelty, his practised eye upon structural ingredients saw not the danger which affrighted his predecessor, and he at once confirmed the whole as to stability, skill of workmanship, and quality of material, notwithstanding he detailed the facts,—and hence there is some prospect of peace being restored in the parish.

Don't you think, Mr. Editor, this circumstance a severe satire on some of the appointments?—I am, Sir, &c.

CHARLES HERMSPRONG.

Nottingham Park, March 21, 1848.

ON THE FORM OF SEA WALLS. INSTITUTION OF CIVIL ENGINEERS.

At a meeting on the 14th inst., Mr. Joshua Field, president, in the chair, the paper read was "An Account of the Effect of the Storm of the 6th December, 1847, on four Sea Walls of different forms, on the coast near Edinburgh, as illustrating the Principles of the Construction of Sea Defences." By Mr. W. J. M. Rankine.

The principal example given was the sea wall of the Leith branch of the Edinburgh and Dalkeith Railway, finished in 1837, built by the author from Mr. Walker's design. Just after it was completed a violent storm occurred, which injured almost every similar work within its range, but produced no ill effect upon that structure. On the 6th December, 1847, a still more violent storm occurred, which did great damage all around; but the railway wall still escaped without injury. The total length of the wall was about 750 yards, its height was 13½ feet above the beach at the highest point, diminishing to about 6 feet at the ends. The height of the top was 4 feet above equinoctial spring tide level. Its least thickness was 5 feet, and its greatest 10 feet; the back was vertical, but the face had an inclination at the lower

part of 5 inches in the foot, gradually becoming curved as it rose upwards, until at the top it overhung slightly. The foundation course was composed of large flat stones, laid horizontally, 4 feet below the surface of the beach, upon a stratum of fine sand and gravel, firm when dry, but moveable when wet. The face was of hammer-drest ashlar, about two feet thick; the back of rubble, 18 inches thick. The interior was filled with concrete. The coping was composed of stones each weighing about half a ton, connected by means of cast-iron dowels. The stone used was Craigleith sandstone. The face joints were laid in cement for a depth of 4 inches. The foundation was protected by a pitching of trap boulders, laid on the natural level of the beach. They were partially disturbed by the storm referred to, and the author ascribed this to their weight being insufficient to resist the vertical oscillation of the waves.

The second example was a vertical sea wall near Trinity, the foundation of which was protected by a dry stone bulwark, sloping at angles of from 30 deg. to 40 deg. The wall was uninjured by the storm, but the pitching was breached at several points. The third example was another wall near Trinity, of a hyperbolic section. The lower part had a slope built dry up to a little below high water mark; at this point there was a sharp curve, and the upper part was nearly vertical, and laid in mortar. The waves extracted the stones of the curved portion, and the upper part being undermined, was destroyed to a great extent. The last example was the bulwark of the Granton Railway, the lower part of which sloped at about 20 deg.; the upper portion was curved, and was covered by a heavy projecting string course and parapet. It was built dry, and the stones of the lower part weighed not less than half a ton each. This bulwark suffered damage to a slight extent in its upper portion.

These examples were stated to confirm the following principles:—That the principal action of the waves in front of a sea wall was a vertical oscillation, produced by the combination of the direct and the reflected waves: that a sloping bulwark gave rise to a sloping oscillation, tending to overturn any portion which projected above the line of slope: that where the strength of a sea wall depended on the pressure of the superincumbent masonry, and the adhesion of mortar and cement, the position of greatest stability was vertical:—and that where the strength depended on the weight of the individual stones, the position of greatest stability was a very flat slope. In the discussion which ensued, instances were adduced of the duration of vertical walls, under the attacks of heavy seas, and on the other hand of their destruction, when flat slopes had effectually resisted the waves: and it was agreed that in this as in all other cases of engineering, no empirical rules should be laid down, but that the skill of the engineer should be exerted to adopt such forms of construction as were best adapted to the locality and the circumstances.

THE SEWERS, THE THAMES, AND PUBLIC HEALTH.

To the Right Hon. the Lord Mayor of London.*

MY LORD,—The present communication is addressed to your lordship, as conservator of the Thames, in consequence of the thorough conviction that the proceedings of the Metropolitan Sewers Commission are threatening us with the most imminent danger; and I beg to call your attention to the following facts:—

The law of 1535 enacted that any one conveying refuse matter into the Thames should forfeit 100 shillings—so desirous were our ancestors to preserve the noblest river in the land. Previous to our present house arrangement being introduced, the more offensive refuse could not flow into the sewers, and it is only during the last forty years that sullage has been allowed to be passed into them. The expense and trouble to be incurred by these new house arrangements were considerable, it being necessary to come to terms with a road or paving and parochial trust, with a water company, and with the Commissioners of

* We insert the following that both sides may be heard.